

**Mercury Thermometer Exchange Program
Report of Activities - 2003**

**Rhode Island Department of Health
Office of Environmental Health Risk Assessment
March 2004**

Errata Sheet – August 2005

- Executive Summary, 1st paragraph, line 5: 18 “other” items should read **46 “other” items**.
- Page 3, Results, 1st paragraph, lines 3 & 9: 18 “other” items should read **46 “other” items**.
- Page 8, Table 2, “Other” Items” line entries: *Providence 1; Warwick 17; Total 18; Items Collected 18* should read **Providence 9; Warwick 37; Total 46; Items Collected 46**.
- Page 9, Summary of Results, 1st paragraph, line 4: 18 “other” items should read **46 “other” items**.

End of August 2005 corrections

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Copies of this information can be made available in Braille, large print, audio cassette, and electronic file on computer disk.

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EXECUTIVE SUMMARY

Rhode Island is a much safer place since 64 pounds of toxic mercury was collected from the community during the Rhode Island Department of Health's (HEALTH) first annual mercury thermometer exchange day on Saturday, November 15, 2003. More than 900 residents participated in this opportunity to properly dispose of unwanted elemental mercury by exchanging over 2,000 thermometers and 18 "other" items, which contained a significant quantity of mercury (see **Appendix B**).

Thermometer collection programs intend to get mercury-containing products safely out of circulation before (accidental or intentional) contamination occurs. The quantity of mercury released from even a single broken thermometer can cause a significant degree of contamination in the home. Thermometers are one of many potential sources of mercury exposure in homes. They not only present a health risk but also pose a problem to those who want to dispose of them safely. However, the public health impact from safe disposal of other mercury-containing items can be even more significant. The 2,000 thermometers (each containing 0.0273 ounces of mercury) collected during this event were only responsible for approximately 3.5 (5%) of the 64 pounds of mercury collected. Removing these "other" mercury-containing items from circulation prevents a public health impact equivalent to the collection of nearly 35,500 mercury-containing thermometers.

The incentive for participants, in addition to protecting the environment, were offered a digital thermometer or a CVS *extrabucks* coupon in exchange for their mercury-containing thermometers. Each participant also received literature about related environmental topics, such as mercury in fish and proper disposal of home-generated medical waste. HEALTH partnered with many agencies, including local fire companies (see **Appendix A**), to make this exchange day a success.

When mercury-containing products are broken or thrown in the trash, outdoors, down the drain or otherwise not handled properly, the mercury pollutes the environment and contaminates many kinds of fish. Breathing fumes, eating contaminated fish, or contacting spilled mercury exposes people to its harmful effects. Elemental mercury also provides a ready method for intentionally contaminating unsuspecting facilities such as hospitals, schools and public buildings. There have been numerous incidents at schools and similar facilities in other states where (accidental or intentional) mercury contamination has caused children to be taken to area hospitals. In addition, schools had to be shut down until the facility could be decontaminated, causing a significant strain on already tight and over-extended budgets. The public health and economic impact could be even greater with an intentional release involving larger quantities of elemental mercury. Removing 64 pounds of mercury from the community and disposing of it properly is one step in limiting the potential for both accidental and intentional mercury exposure in Rhode Island.

INTRODUCTION

Although Rhode Island banned the sale of mercury fever thermometers as of January 1, 2002, this legislation didn't address handling or disposal of mercury-containing thermometers already in use for residences. Thermometers are one of the many potential sources of mercury exposure in a home. Accidental mercury releases from broken thermometers and thermostats in the home present a risk to families, as well as to the community.

Thermometer collection programs aim to get mercury-containing products safely out of circulation before (accidental or intentional) contamination occurs. The quantity of mercury released from even a single broken thermometer can cause a significant degree of contamination in the home. If not handled and disposed of properly, elemental mercury poses an extremely high risk of (accidental or intentional) contamination for other unsuspecting facilities such as hospitals, schools and public buildings. There have been numerous incidents at schools and similar facilities in other states where (accidental or intentional) mercury contamination has caused children to be taken to area hospitals. In addition, schools had to be shut down until the facility could be decontaminated, causing a significant strain on already tight and over-extended budgets. The public health and economic impact could be even greater with an intentional release involving larger quantities of elemental mercury. Furthermore, when mercury-containing products are broken or thrown in the trash, outdoors, or down the drain, the mercury pollutes the environment and contaminates many kinds of fish. Breathing fumes, eating contaminated fish, or contacting spilled mercury exposes people to its harmful effects.

This report summarizes the mercury thermometer collection activities sponsored by HEALTH during the calendar year 2003.

PLANNING AND LOGISTICS

HEALTH, in partnership with the Audubon Society of Rhode Island, Clean Water Fund, CVS, Providence Fire Department, Rhode Island Department of Environmental Management (DEM), Rhode Island Resource Recovery Corporation (RIRRC), and Warwick Fire Department, sponsored two collection sites on November 15, 2003. Participants were asked to bring a mercury thermometer or other mercury-containing item, in its original container or sealed plastic Ziploc bag, to either of the two fire station drop-off locations: 140 Veterans Memorial Drive (Warwick) or 847 Broad Street (Providence).

Although the thermometer exchange program was considered a success (see **Results** below), it didn't just happen. There was quite a bit of coordination and planning that went into this event!

➤ **Volunteer Recruitment**

The volunteers who worked at the collection sites were recruited by contacting partners of the Mercury Working Group (organized by the office of the Rhode Island Attorney General).

➤ **Program Advertisement**

HEALTH issued a press release to inform the public about this mercury thermometer exchange. Information about this mercury thermometer collection day was also placed on HEALTH's website. Additionally, the event was advertised in the newspaper, on local radio stations, and with fliers posted at local public libraries, supermarkets, community colleges, local post offices, selected CVS pharmacies, as well as local businesses in several communities.

➤ **Program Incentives**

In exchange for a thermometer or other household items that contained mercury, each participant received either a free digital thermometer or CVS *extrabucks* coupon redeemable at local CVS stores. Participants were also provided with literature about related environmental health topics (i.e., mercury in fish, proper disposal of home-generated medical waste).

➤ **Program Evaluation**

Information was gathered from each participant the day of exchange, such as what town they lived in, how they heard about the mercury thermometer exchange program, how many thermometers they were exchanging, as well as if they had other mercury-containing products to drop-off that day. Analysis of this information revealed several interesting patterns (see **Results** below) and will be a valuable tool for determining future exchange locations.

RESULTS

More than 900 residents participated in this opportunity to dispose of unwanted elemental mercury. Approximately 64 pounds of mercury-containing products were collected, including over 2000 thermometers and 18 "other" mercury-containing items. As noted above, thermometers are one of many potential sources of mercury exposure in homes. They not only present a health risk but also pose a problem to those who want to dispose of them safely. However, the public health impact from safe disposal of other mercury-containing items is even more significant. To help put this fact into proper perspective, the 2,000 thermometers (each containing 0.0273 ounces of mercury) were responsible for 3.5 (5%) of the 64 pounds of mercury collected. The 18 "other" items accounted for 95% of the mercury collected. Removing these "other" mercury-containing items from circulation prevents a public health impact equivalent to the collection of nearly 35,500 mercury-containing thermometers (see **Appendix B**).

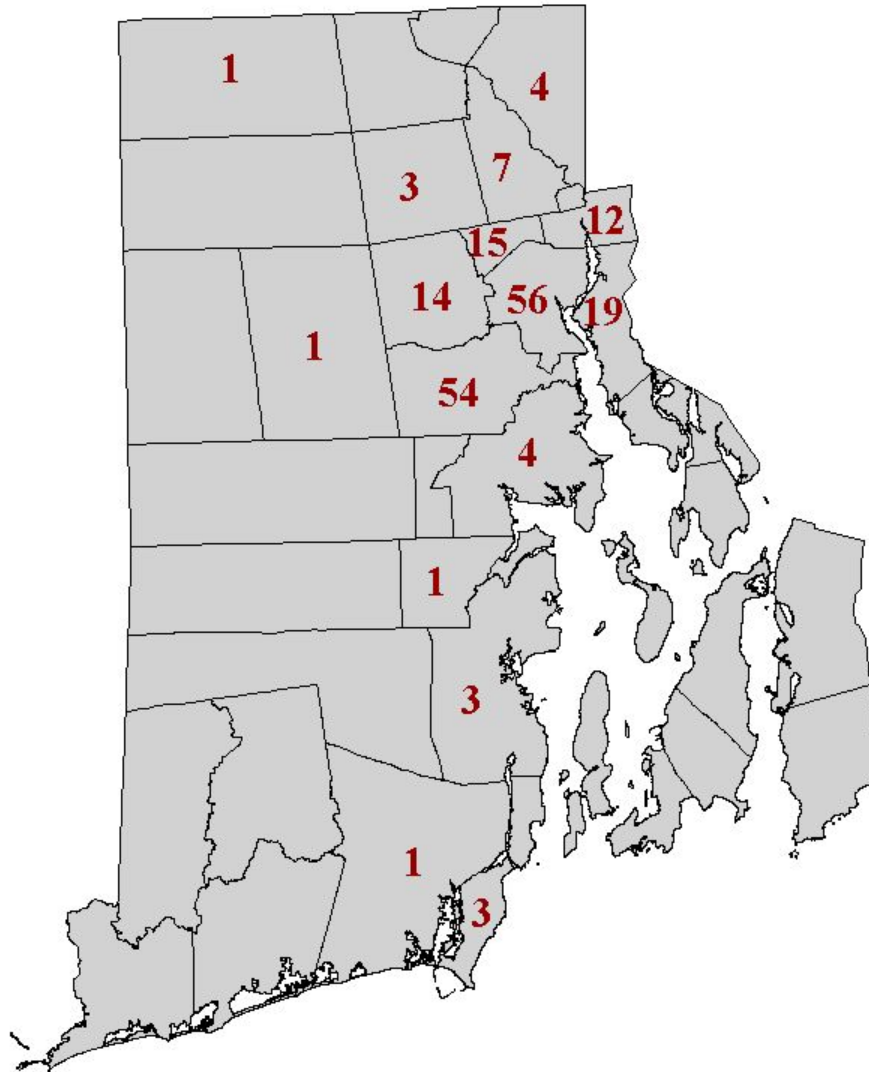
Figure 1. Presents data for the city/town of the 210 participants utilizing the Providence drop-off site. As might be expected, slightly over 61% of the participants were either from Providence (56) or two immediately adjoining cities [Cranston (54); East Providence (19)]. The remaining participants were primarily from other surrounding communities.

Figure 2. Presents similar data for the 711 participants utilizing the Warwick drop-off site. Slightly over 75% of the participants were either from Warwick (390) or two immediately adjoining cities [Cranston (101); West Warwick area (45)]. The remaining participants were from other cities across the State.

Table 1. Summarizes data for the city/town of all 921 participants in this exchange.

Table 2. Summarizes data on the number of mercury-containing items dropped-off by each participant. As might be expected, the majority (58%) of the participants dropped off only a single thermometer [27% of total collected]. Another 37% of the participants dropped-off between 2-5 thermometers [45% of total collected]. Additionally, one participant dropped-off 200 thermometers [10% of total collected].

Participant City/Town
Mercury Thermometer Exchange - 15 November 2003
Broad Street Fire Station - Providence, RI

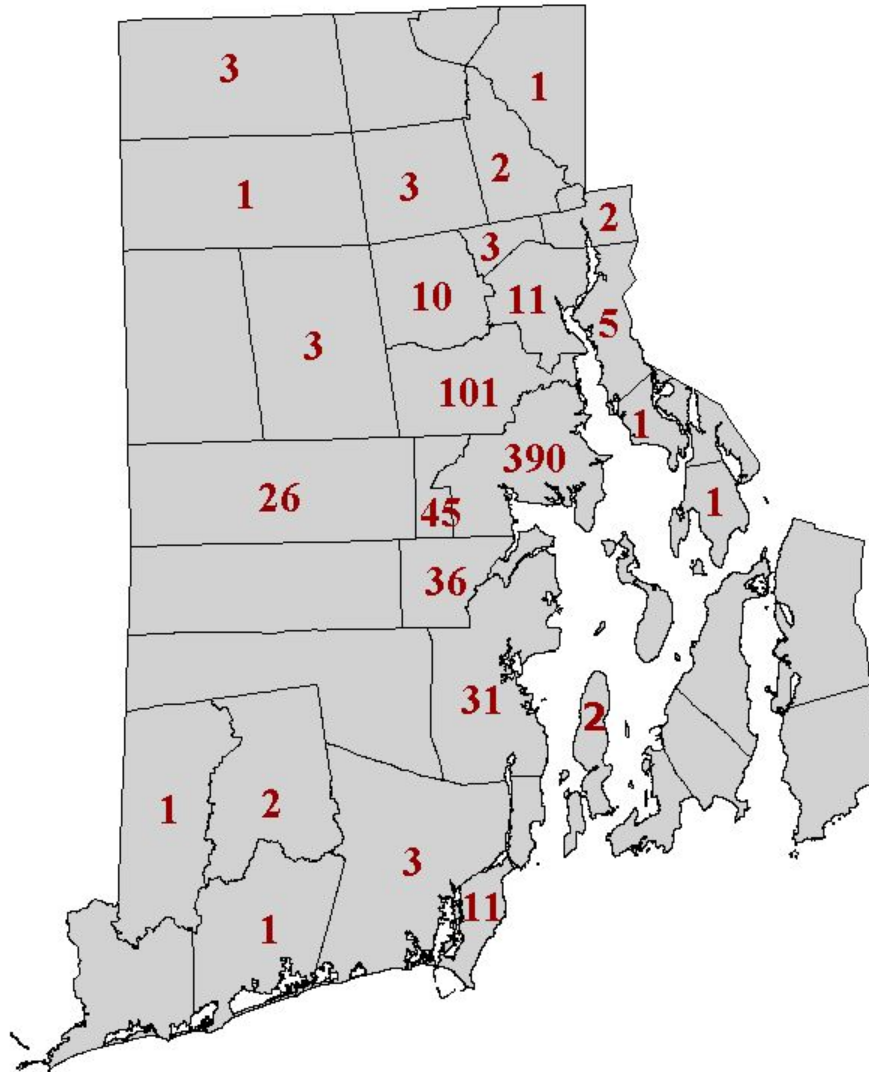


OUT OF STATE/UNKNOWN = 5

TOTAL PARTICIPANTS = 210

Figure 1

Participant City/Town
Mercury Thermometer Exchange - 15 November 2003
Veterans Memorial Drive Fire Station - Warwick, RI



OUT OF STATE/UNKNOWN = 15

TOTAL PARTICIPANTS = 710

Figure 2

TABLE 1
PARTICIPANT HOME CITY/TOWN
NOVEMBER 15, 2003 - ALL SITES

CITY/TOWN	PROVIDENCE	WARWICK	TOTAL
Barrington	7	1	8
Bristol	0	1	1
Burrillville	1	3	4
Charlestown	0	1	1
Coventry	0	26	26
Cranston	54	101	155
Cumberland	4	1	5
East Greenwich	1	36	37
East Providence	19	5	24
Glocester	0	1	1
Hopkington	0	1	1
Jamestown	0	2	2
Johnston	14	10	24
Lincoln	7	2	9
Narragansett	3	11	14
North Kingstown	3	31	34
North Providence	15	3	18
Pawtucket	12	2	14
Providence	56	11	67
Richmond	0	2	2
Scituate	1	3	4
Smithfield	3	3	6
South Kingston	1	3	4
Warwick	4	390	394
West Warwick	0	45	45
Non RI/Unknown	5	16	21
TOTALS:	210	711	921

TABLE 2
TOTAL ITEMS COLLECTED
NOVEMBER 15, 2003 - ALL SITES

# THERMOMETERS	PROVIDENCE	WARWICK	TOTAL	ITEMS COLLECTED
1	114	419	533	533
2	43	127	170	340
3	14	69	83	249
4	14	31	45	180
5	10	18	28	140
6	7	7	14	84
7	4	5	9	63
8	1	7	8	64
9	0	3	3	27
10	0	1	1	10
11	0	3	3	33
12	0	1	1	12
13	0	1	1	13
14	0	1	1	14
18	1	0	1	18
22	0	1	1	22
200	1	0	1	200
THERM TOTALS:	209	694	903	2002
“Other” Items	1	17	18	18
GRAND TOTAL:	210	711	921	2020

SUMMARY OF RESULTS

HEALTH's first annual community mercury thermometer exchange proved to be very successful. The amount of elemental mercury collected for a one-day exchange far surpassed expectations. More than 900 residents participated in this opportunity for safe disposal of 64 pounds of unwanted elemental mercury, collecting over 2,000 thermometers and 18 "other" mercury-containing items (see **Appendix B**). Collecting such a large amount of mercury from the community limits the potential to accidentally or intentionally contaminate homes or other public facilities while also protecting the environment. Primary prevention (i.e., safely collecting mercury-containing products and removing them from circulation before contamination occurs) is an important public health function which will facilitate protecting both homes and unsuspecting facilities (e.g., hospitals, schools and public buildings) from mercury contamination.

This project has shown that outreach efforts to increase community awareness regarding the risks associated with having mercury-containing products in the home will result in greater community participation. Distribution of digital thermometers and CVS *extrabucks* coupons were an additional positive incentive for recruiting the community in safely disposing of their unwanted mercury-containing products. Educational materials were also distributed at each location to reinforce awareness concerning several environmental issues.

There was also some evidence that the outreach message had reached beyond those who actually participated in the thermometer exchange. Several inquiries were received after the collection from those who were concerned about the proper disposal of their mercury-containing item and were anxious to participate in future exchanges. These types of response demonstrate the continuing need for both additional thermometer exchange days and efforts to educate the community regarding the risks associated with the improper handling and disposal of mercury.

Although HEALTH took the lead in organizing this thermometer exchange event, the degree of success achieved would not have been possible without the contributions of numerous community partners (see Appendix A). The overall impact of this event can also be measured by the fact that all of our partner organizations expressed an interest in continuing to work together for future exchanges, while some additional community partners have come forward and volunteered to participate in future activities. HEALTH has also agreed to provide technical assistance to fire companies and other community groups who want to independently sponsor mercury thermometer exchange days in the future.

RECOMMENDATIONS FOR FUTURE ACTIVITIES

- Encourage fire companies to independently conduct future exchange programs.
- Solicit additional community partners to assist in this effort.
- Rotate drop-off locations according to community needs.
- Stagger hours that drop-off locations are open according to community needs.
- Allow more lead-time to advertise the thermometer exchange programs.
- Restrict distribution of incentives to the day of the exchange.

APPENDIX A

Partnership in Mercury Collection

Audubon Society of Rhode Island

Clean Water Fund

CVS

Providence Fire Department

R.I. Dept of Environmental Management (DEM)

R.I. Department of Health (HEALTH)

Rhode Island Resource Recovery Corporation (RIRRC)

Warwick Fire Department

APPENDIX B
Photographs of Items Collected

